UCRL-JC-124684 Abs

Abstract Submitted
for the DPP96 Meeting of
The American Physical Society

Sorting Category: 4.1 (theoretical)

Backscatter, filamentation and laser light smoothing in flowing plasmas.* D. E. HINKEL, C. H. STILL, R. L. BERGER, A. B. LANGDON, E. A. WILLIAMS, *Lawrence Livermore National Laboratory* — The three-dimensional (3-D) code F3D with nonlinear hydrodynamics [1] is used to examine filamentation and backscatter driven by non-uniform laser beams. Previous work with linearized hydrodynamics demonstrated that both supersonic and subsonic transverse flow deflects the laser beam in the flow direction. [2] In agreement with analytic estimates, [3] 3-D simulations of uniform, initially stationary plasma show that laser beam RPP hotspots move, yielding a time averaged laser intensity smoother than the instantaneous pattern. This naturally occurring smoothing will be compared to that in two-dimensional simulations. [4] The influence of 3-D beam structure on filamentation, Brillouin backscatter and beam smoothing will be examined with and without axial and transverse flow.

---

*Work performed under the auspices of the U. S. DOE by LLNL under Contract No. W-7405-ENG-48.

[1] C. H. Still et al., BAPS **40**, 1823 (1995).
[2] D. E. Hinkel et al., accepted, PRL, June, 1996.
[3] D. E. Hinkel and E. A. Williams, BAPS **37**, 1376 (1992).
[4] A. J. Schmitt and B. B. Afeyan, BAPS **40**. 1824 (1995).

☐ Prefer Oral Session
☒ Prefer Poster Session

D. E. Hinkel
denise@icf.llnl.gov
Lawrence Livermore National Laboratory

Date submitted: July 5, 1996 Electronic form version 1.1